

food digest



National Information Centre
for Food Science and Technology.
Central Food Technological
Research Institute, Mysore

NISSAT
Department of
Science and Technology

FOOD DIGEST

Volume 2 Number 2

April-June 1979

NATIONAL INFORMATION CENTRE FOR FOOD SCIENCE & TECHNOLOGY
AT
CENTRAL FOOD TECHNOLOGICAL RESEARCH INSTITUTE
MYSORE 570 013, INDIA

FOOD DIGEST

Volume 1 Number 1
April-June 1972

Editor: J. H. BURTON, JR., University of California, Davis
Editorial Board: J. H. BURTON, JR., University of California, Davis
J. H. BURTON, JR., University of California, Davis
J. H. BURTON, JR., University of California, Davis
J. H. BURTON, JR., University of California, Davis

C O N T E N T S

	Page
Storage ...	53
Food Additives ...	53
Process ...	57
Byproducts & Waste Utilization ...	65
Processed Products ...	66
Equipment & Machinery ...	70
Packaging ...	80
Analysis ...	83
Economic & Commercial Statistics ...	89
Food Legislation, Quality Control & Hygiene ...	104
Transfer of Technology & New Industries ...	108

* * * * *

1.0000

2.0000

3.0000

4.0000

5.0000

6.0000

7.0000

8.0000

9.0000

10.0000

11.0000

12.0000


```

*****
**          **
** STORAGE  **
**          **
*****

```

98 Non-Chemical insect control

Insectocutor is an effective method of non-chemical control of flying insects like houseflies, fruit flies, flying beetles, moths, mosquitoes and other insects. It is recommended for canteens, canning factories, bottling plants, food processing units, slaughter houses, sugar factories, bone processing units, pharmaceutical plants, hospitals, tanneries, fisheries, kitchens, bakeries, restaurants, poultry farms, stables, sweetmeat shops, airports, super markets, clubs, as well as TV and film studios. The electronically operated device is a practical, efficient and hygienic insect control equipment intended as a permanent installation for continuous operation. It poses no danger of pollution, no risk of toxicity and no short or long term hazards. The insects develop no immunity against this instrument since no chemical mode of control is involved. The device consists of ultraviolet fluorescent tubes to attract flying insects which are then trapped and electrocuted in an electric grid. The lamps used are specifically meant for attracting flying insects and are safe to human eyes. Current in the grid is insufficient to seriously harm a human being (Industrial Products Finder. 7(8); 1979; 40)

```

*****
**          **
** FOOD ADDITIVES **
**          **
*****

```

99 Cocoa butter substitute okayed by FDA

Cocoa butter substitute from palm oil received GRAS affirmation as a direct food substance in a November 21 FDA action,

FDA feels the *c/u name established, "cocoa butter substitute from palm oil," has the advantage of "both identifying the basic nature of the ingredient and ... the source of the starting material."

The ingredient has a similar chemical composition to natural cocoa butter: 26% palmitic acid in natural cocoa butter compared to 20% in the ingredient; 35% oleic acid compared to 32% in the ingredient; 3% linoleic acid compared to 2% in the ingredient; 34% stearic acid compared to 44% in the ingredient.

In a related action on Nov.21, FDA approved use of tri-fluoromethane sulfonic acid in the manufacture of cocoa butter substitute from palm oil (Food Product development. 13(1); 1979; 8)

(*c/u = common/usual)

100 Potassium sorbate in bacon products

The tests showed that 0.26-percent potassium sorbate together with 40 parts per million nitrite in bacon provided antibotulinal protection equal to or better than 120 parts per million of nitrite. Fried bacon containing 40 parts per million nitrite and 0.26 percent potassium sorbate was found to contain less than five parts per billion volatile nitrosamines. (Processed Prepared Food. 147(8); 1978; 102)

101 Fruit concentrate preserves baked goods

Raisin juice concentrate is currently used in more than 50 different variety breads in the U.S. and is recommended for most dark baked goods. Depending on the formula and climatic conditions, products containing 5 to 10% concentrate remain fresh two to three days longer than the same breads without concentrate. (Food Product Development. 13(1); 1979; 34)

102 New source for xanthan gum

A food-grade xanthan gum is produced by the pure culture fermentation of the microorganism, *Xanthomonas campestris*. This new biopolymer is a high molecular weight polysaccharide suitable for food processing and applicable in syrups, spoonable dressings, sauces and gravies, relishes, pourable dressings, juice drinks, frozen foods, dry mixes, canned foods and more. Xanthan gum is resistant to extremes of acidity and to high temperatures. This gum is particularly useful as an aid to thickening, suspending, emulsifying and stabilizing water-based systems. (Processed Prepared Food. 147(8); 1978; 79)

103 Gum acacia blend for encapsulating

Emulgum, a synergistic blend of gum acacias for applications in emulsification, encapsulation and stabilization of foods and beverages has been developed.

The suggested applications include: stabilizing cloud emulsions prepared with vegetable fats or oil-soluble gum resins; emulsion concentrates for beverages;; encapsulation and spray drying of flavors, vitamins, colors; stabilization of other selected emulsions.

seed vi. The principal advantage of Emulgum is that its molecular structure, capable of trapping two-to-three times its own weight in essential oils, permits substantially lower use levels for effective stabilization. Besides the economic advantages, Emulgum permits longer shelf life for spray dried flavors, is tasteless and odorless in finished products and exhibits three-to-five times the effectiveness in the stabilization of beverages. (Processed Prepared Food. 147(9); 1978; 102)

104 Molasses product reduces hamburger shrinkage

Dri-Mol 604 dehydrated molasses product reduces shrinkage and improves flavor, juiciness, and texture of hamburger when added to any ground meat recipe. As little as 2.5% provides more moisture retention,

producing fried grilled hamburgers which are more juicy. Meats also have a more tender texture, good mouth feel and pleasing "sweet meat" flavor. At 3% applications levels, Dri-Mol 604 reduces shrinkage by 6.38%. Since cost of this ingredient application adds less than 4¢ to the total cost of a quarterpound hamburger, significant savings are obtained. (Food Product Development. 12(10); 1978; 46)

105 A new emulsifier

Powder plus represents a new and improved beaded blend of succinylated monoglycerides and distilled monoglycerides prepared from edible hydrogenated animal fat. Emulsifier is produced by a new concept in beading technology which incorporates into the product the advantages of both powders (easy to handle) and hydrated products. Thus, the product disperses instantly in cold water with minimal agitation and remains in suspension. Powder plus softener/conditioner is effective in conventional or continuous mix baked goods, providing excellent softness and shelf life over extended four to five day periods. (Food Product development. 12(10); 1978; 44)

106 Emulsifier from soy protein

Nutrisoy 101 a specially processed emulsifier and nondairy base made from soy protein. In pourable and spoonable salad dressings, the ingredient permits a 50% reduction in oil concentration without adversely affecting product appearance, consistency, or organoleptic properties. Caloric content also is reduced by 40 to 50% and ingredient cost lowered significantly. By incorporating Nutrisoy into salad dressing type formulations, manufacturers eliminate the need for egg solids, while increasing the protein level. Additional ingredient applications include use as a nutritious beverage or as a replacer/ extender of dairy proteins in soups, sauces, and baked goods. (Food Product development. 12(10); 1978; 42)

107 Chicken-type flavor

Spectra-CBH is a flavor designed for use in a wide variety of

products, dry mixes, wet systems and retort systems to provide a product with a flavor similar to that imparted by freshly-cooked chicken meat. The product may also have application in such seafood products as clam chowder. Or it may be used at low levels to round out the flavor of a tomato soup.

The usage level of this ingredient ranges from 0.3 to 0.5 per ce as consumed, considerably lower than the usage level of hydrolyzed plan protein. Spectra-C8H is composed of 100-percent flavor solids and is not dried on any carrier. It is also priced competitively against artificial meat-type flavors currently on the market. (Processed Prepared Food. 147(6); 1978; 50)

108 Masking flavors used at low levels

Masking flavors help cover flavors and aromas produced by amino acid combinations in protein products and assist in keeping the products acceptable to consumers. Masking flavors are used at very low levels and are offered along with flavors for meat analogs including beef, chicken or pork types. The masking flavors cover off-flavors without imparting characterizing flavors of their own, permitting the free use of other flavors in these products. Information about the natural and artificial masking flavors in liquid or powdered form, is available. (Processed Prepared Food. 147(8); 1978; 86)

```
*****
*                                     *
*                                     *
*      PROCESSES      *
*                                     *
*                                     *
*****
```

109 Alcohol from cane juice

The government is considering the technical feasibility and economic viability of producing power alcohol directly from sugarcane juice as is being done in Brazil.

However, on present indications, the cost-price structure would be somewhat unfavourable under the Indian conditions.

According to the present cost-price structure of sugarcane and molasses, the bare cost of power alcohol, if produced directly from cane juice, would come to about Rs.3.50 per litre as against 68 paise per litre via the molasses stream. (Indian Sugar. 28(9); 1978; 599)

110

New process for removing SO_2 from grape juice

Unfermented grape juice-or sweetener reserve as wine makers call it-is added in limited amounts to wine prior to bottling. It is difficult to preserve the sweetener reserve so as to prevent fermentation during storage. They deteriorate the wine's taste. Sulphur is therefore commonly used.

But sulphur brings in a new difficulty. How to remove excess sulphur dioxide (SO_2) before adding the sweetener reserve to the wine. Excess SO_2 is prohibited by law in most wine-producing countries.

Several methods have been devised in the past for removing excess SO_2 , but all have proved unpractical or uneconomical.

Wine makers can now solve this problem with the aid of a new continuous process.

Entirely thermal in effect, the process requires no inert carrier gases such as nitrogen or any other auxiliary medium. Only vapors originating from the product itself are used. Desulphurization efficiency is so high that excess SO_2 is reduced from 2000 mg/l before treatment to less than 100 mg/l after treatment. There is no oxidation, and potassium sulfate content remains constant. (Food Engineering. 3(10); 1978; 74)

111

Breakthrough in spray-drying improves quality, shelf-life

Fruit and vegetable powders can now be produced with the taste, colour and vitamins of the original, natural product. The key to this unique development is the application of low temperatures of 40° to 50°C to spray-drying. (Food Engineering. 3(4); 1978; 48)

112 Crab analog from wheat gluten

Japan has developed a process to fiberize wheat gluten into a crab meat analog. Briefly stated, the analog of finely fibered structure is produced by blending a reducing agent and a foaming agent with wheat gluten. Then, the blended material is heated to gelation.

The reducing agent may be any food-grade type such as sodium sulfite, potassium sulfite, sodium bisulphite, potassium bisulphite etc. Not more than 0.3 percent of the agent (used alone or in combination with other reducing agents) by weight of the wheat gluten is necessary.

The foaming agent used should release gas at room temperature or during the heating operation after being blended with wheat gluten and mixed with water. Sodium bicarbonate, potassium bicarbonate, sodium carbonate and potassium carbonate are typical foaming agents that can be used. Usage levels can range from 0.1 to 3% by weight of the wheat gluten.

Seasoning of the analog meats can be done by adding an appropriate amount of spices and/or flavouring during the blending operation, or alternatively after the completion of the process. (Food Engineering. 3(4); 1978; 43)

113 New source of soluble protein

A soluble hydrolysed gelatine for protein enrichment of beverages, food products, pharmaceutical and cosmetic preparations has been developed.

Hydrolysed gelatine is a protein of high purity and is completely soluble in water at ambient temperatures. It is a protective colloid and dispersing agent acting as a stabiliser or emulsifier in food products, such as sauces, toppings, syrups, dressings, soups, milk powder dessert mixes, fruit squashes and concentrates, low calorie frozen and other desserts.

Hydrolysed gelatine is produced by enzymatic hydrolysis of a gelatine solution followed by spray drying. The product is a pale yellow powder with bland taste and giving solutions of high clarity.

Product specification is that no gelation occurs with a 50 percent w/v solution at 10°C. Viscosity is less than 5000 cP with a 50 percent w/v solution at 20°C, pH 4.5 - 5.0 and moisture content 5-7 percent.

The assessments which have been carried out on flavoured spray dried hydrolysed gelatine, prepared as drink bases, show greatly superior palatability compared with formulations based on liquid protein hydrolysates containing preservatives.

The fact that hydrolysed gelatine can be prepared and stored in the dry form without the need for preservatives provides an important advantage with regard to requirements of food standards. The need for specific approval for use of preservatives is avoided where products can be prepared in a dry powder form. Also the dry product avoids the co-addition of preservatives to foods where food standards may not permit the use of preservatives.

A further important feature in the preparation of a dry product is the degree of microbiological control which can be exercised. High microbiological quality is ensured through the quality of the gelatine starting material together with pasteurisation stages in the conversion to the spray dried hydrolysed product. (Indian Food Packer. 32(3); 1978; 94)

Lecithin free of crude soybean oil

Substantially free of crude soybean oil is a granular product from Alcolec PG, a purified lecithin product which is soybean lecithin obtained by extracting at a relatively low temperature, removing part of the oil resulting in a purified phosphatide containing about two-percent residual soybean oil. Applications of this lecithin product include cereals, fruits, juices or other foods and beverages. Alcolec PG is soluble in most common fat solvents except acetone and may be

dissolved in mineral oil.

The product is ideal for incorporation in flavoring oils, as Alcolec contains a low flavor level. (Processed Prepared Food. 147(9); 1978; 104)

115 Removing flatulence factors from soybean

Soyabean (Soy) products could become more important sources of protein for human consumption, if it were not for the discomfort of flatulence that is associated with ingesting soy products. Studies have led to the conclusion that two oligosaccharides in soyabeans - raffinose and stachyose are the flatulence inducing components.

Researchers at USDA's laboratories have isolated an enzyme-mix of alpha-galactose and invertase that appear useful as catalysts for hydrolysis of the above oligosaccharides to monosaccharides (fructose and galactose) so that the latter can be removed by dialysis from soy-milk or soy-whey. The enzyme galactosidase exhibits stable optimum activity at pH 5, the pH of soy-milk and is useable at temperatures upto 50°C. (Indian Chemical Journal 13(9); 1979; 36)

116 A Japanese method for fish meal production

The fish processing plant waste consists of 50 percent water, 30 percent protein, 15 percent oil and 5 percent ash. The material is heated to 80°C under low pressure and a recovery rate of about 50 per cent has been quoted. (Indian Sea Foods. 13(4) & 14(1); 1978; 32)

117 Removal of cellulose from rapeseed

Dehulling and sorting line enables 90 to 98% of cellulose contained in rapeseed to be removed in a continuous process operation. The percentage achieved depends on the rapeseed variety being processed.

The novel process utilized is claimed to give minimum rupture of the oil-containing cells, thus preventing oil losses and ensuring

exceptional yield. The resulting cake is an excellent source of assimilable protein.

In addition to rapeseed, the equipment can equally well be used for sunflower seed. Output of the first prototype is 3 to 5 t/h. (Food Engineering. 3(10); 1978; 37)

118

Caffeine from coffee

The average ^{Caffeine} ~~coffee~~ content of the coffee plant is 1.2%. Ever since coffee was first used there have been a great deal of criticism levelled at its physiological action in humans. It is known that caffeine in sufficient amounts affects the nervous, cardiac and kidney functions of human body. The decaffeinated coffee industry has expanded to provide coffee for those who are sensitive to caffeine. Its primary objective is the removal of 97% of the caffeine present in coffee without impairing the flavour and quality.

In solvent extraction process of caffeine from coffee beans, five main steps are as follows:

1. The moisture content of the green coffee is increased from the original 10% to above 20%.
2. The coffee is treated with an organic solvent, trichloroethylene for a period of time sufficient to extract 97% of the caffeine.
3. The coffee is steamed to remove the residual solvent.
4. Excess moisture is removed by drying.
5. The decaffeinated coffee is roasted and packed.

The first three operations are carried out in an enclosed rotating drum. The wet coffee is taken out of the drum and put into a separate dryer. The dried coffee is then roasted and packed in the usual manner.

The purpose of introducing moisture into the coffee beans is to

dissolve the coffee and make it possible for the organic solvent to extract it by ordinary diffusion mechanism. Previously it was found that at least 18% moisture is required but afterwards it was found that even more moisture is desirable if time of extraction is to be reduced to a minimum.

After the coffee beans have been properly wetted with water caffeine is extracted by circulating trichloroethylene at 70°C through the drums containing the coffee. In this step usually a battery of drums are used for counter-current operation. After the caffeine content of the beans has been reduced to about 0.03% the extraction is discontinued and the residual solvent is drained off the beans. At this time the trichloroethylene held by the beans is roughly equal to the weights of the dry beans and it is removed by steaming with live steam for several hours. The final coffee contains a considerable amount of water.

The beans are now dried in a tray dryer to about 10% moisture. Trichloroethylene is recovered from caffeine-trichloroethylene solution by distillation in a continuous natural circulation evaporator. The concentrated residue is a solution of 60% caffeine and 40% other materials; the latter largely composed of the wax that originally constituted the protective layer on the outside of the coffee beans. This wax has never been used for any commercial purpose. The solution is sent to the caffeine-refining operation for the recovery of caffeine. (Cottage industries. 12(4); 1979; 14)

119 Tamarind seed starch

This starch, a substitute of Sago and Tapioca Starch is used for sizing and finishing purposes in jute and textile industries. It is prepared from tamarind seeds which are thoroughly washed with water to free them from any adhering pulp. The seeds floating on the water are discarded and submerged seeds are taken out and fumigated with sulphur dioxide gas or soaked in 25% brine solution. Then the seeds are dried and the starch is recovered from the dried seeds as per process given below:-

1. Cleaning of seeds to remove foreign material and the spoiled seeds

2. Roasting of cleaned seed in mechanical roasters or manually in open pans with sand.
3. Cooling of seeds after roasting process for a period of 6-7 days. After cooling the kernel shrinks a bit and it enables easy removal of hull in the decorticators
4. Grading of seeds to prepare the seeds for pulverizing. Be sure that only graded and pure white kernels are required. These kernels as obtained from decorticator will be having about 3 to 5% of undecorticated seeds.

The kernels are now taken into pulverizer where they are powdered. The pulverized powder also commonly known as tamarind seeds starch is cooled for a period of 3-4 hrs. Now this powder is taken into sieving machine where starch is sieved through different mesh ranging from 60 to 100 mesh depending upon the consumers requirement.

Note:

1. During roasting, care must be taken that the kernel inside the seed is not damaged or over-roasted, because it destroys the quality of starch resulting in cream colour.
2. During roasting, the air and moisture contents of kernel is reduced.
3. Roasting and cooling of seeds imparts resistance against attack by insects to the seeds and well roasted seeds can be stored for a longer period of time without due spoilage.
4. The percentage of hull to the seed is 35 to 40%. As such for every 100 kgs of seeds fed, only 60 to 65% of kernels are obtained.

5. During pulverizing process 1% of wastage occurs, i.e., 99 kgs. of powder is obtained from 100 kgs. of kernel fed into the pulverizer.

(Cottage Industries. 12(4); 1979; 14)

```

*****
*                                     *
*   BYPRODUCTS AND WASTE           *
*   UTILIZATION                     *
*                                     *
*****

```

120 High protein from wheat germ product

A partially defatted wheat germ product that contains half of the natural polyunsaturated oil of the wheat kernel is toasted and stabilized for addition to a variety of prepared foods. The product called Embo contains approximately 34 percent protein, with an excellent amino acid balance. High in 9 vitamins, the toasted wheat germ is offered in varying sizes from nuggets to regular granules. Fiber content is 2.4 percent and fat is five percent of Embo. (Processed Prepared Food. 147(6); 1978; 50)

121 Cooking fuel from farm wastes

The Philippines National Meat Inspection Commission, Research and Technical Services Division, has found a way of preparing an inexpensive, odourless cooking fuel from six parts of carabao and cattle dung and one of rice hulls. The mixture is compacted with a manual press and dried in the sun for 10-15 days, reducing the moisture content to 10 per cent. The fuel takes about 15 minutes to ignite and can cook three chupas (1.125 liters, weighing about 450 g) of rice in 30 minutes. The only disadvantage is that constant attention must be given to the fire so that the ash does not build up and smother the flame. A new stove design might be the solution. (UNIDU Newsletter. No.127; 1978; 4)

122 Incentive for bagasse use in paper making

Total excise exemption has been granted for writing and printing paper to be produced by new units using at least 75 percent of bagasse. Priority will be accorded to sugar mills who set up the paper units. Depending on their response, licences will also be issued to private entrepreneurs including large industrial houses. (Indian Sugar. 28(11); 1979; 733)

123 Waste compactor ensures hygienic trash disposal

Food factories, bakeries, canteens and hospitals will find this compactor an efficient and hygienic tool for waste disposal. Exerting a pressure of up to 1.5 tons, the equipment reduces volume of most waste materials to approximately one sixth. It can handle all types of normal refuse such as wet or dry garbage, food waste, tins, bottles, paper or plastic.

Designated Electropactor, the unit is housed in a totally enclosed cabinet to provide odor-free disposal. Materials are compacted directly into strong polyethylene bags which are then sealed. Operation is by push-buttons. (Food Engineering. 3(4); 1978; 90)

124 Heat recovery application

A company in the bakery equipment business has developed a method for recovering waste process heat to heat or chill factories. The ovens from which the waste heat is recovered and put to productive use are gas fired. There will be continuing saving of 40% on energy costs. (Food Manufacture. 53(7); 1978; 71)

```
*****
*                                     *
*   PROCESSED PRODUCTS               *
*                                     *
*                                     *
*****
```

125 Low-calorie dairy spread

A new low-calorie dairy spread developed in Sweden is a noteworthy

nutritional advance in modern nutrition to provide better nutrition against cholesterol and obesity. This new product combines the respective merits of butter and margarine - including the latter's excellent spreadability when taken direct from the refrigerator. The product has been introduced already in London and Tokyo markets. It accounts for 90% of light margarine sales in Sweden.

The new nutritional product is a blend of butter oil, butter milk and vegetable oil. High spreadability is ensured by means of a new process, which allows water to be mixed into the protein solids, instead of vice-versa. The fat content at 40% is only half that of butter and margarine. The product is lower in calories and higher in polysaturated fats and proteins as compared to butter and most margarines. It is cheaper than butter. Further, dairy ingredients account for 80% of its volume and impart a better taste. The dairy ingredients are emulsified with vegetable oils, chiefly soya oil. (Indian Chemical Journal; 13(9); 1979; 36)

126 Yogurt powder

A series of yogurt powders for applications ranging from baked goods and salads to confections and frozen desserts has been developed. It contains dehydrated yogurt (cultured milk and nonfat milk) with viable organisms *L. bulgaricus* and *S. thermophilis*. Butterfat level measures 18% minimum. Two other nonfat yogurt powders are one containing dehydrated nonfat yogurt similar to instant milk in instant powder form and another consisting of dehydrated nonfat yogurt to which sodium citrate is added. All these ingredients offer convenience of handling, storage, and mixing, and need no refrigeration. (Food Product Development. 12(10); 1978; 39)

127 Italy - Renowned for its cheese

Italy is world famous for its many tasty varieties of cheese. Who does not know about parmesan cheese, which was being made as early as 1000 A.D., or Gorgonzola cheese which originated in the 13th century?

Italy produces, in all 195 varieties of cheese, of which 120 are made from cow's milk, 30 from buffalo milk (e.g. the highly prized Mozzarella), 40 from sheep's milk, and only 5 from goat's milk. Moreover each region has its specialities: e.g., there are 13 special types in the Abbruzzi mountains, 26 in Campania, 16 in Emilia, 14 in Sardinia, and 12 in Sicily. The major part (80%) of the production is "sweet" cheese, 10% being sharp cheese, and another 10% smoked cheese. 25 types of cheese like the Parmigiano-Reggiano (Parmesan) are used both as grated cheese and as sliced cheese. (Lebensmittel-Industries. 25(4); 1978; 156)

128 Peanut flour has new application areas

Peanut flour exhibits compatibility with seafood flavors such as shrimp and salmon and actually enhances seafood taste. The addition of 10% peanut flour (basis wheat flour) thickens and improves the mouthfeel of tempura batter coatings. Peanut flour also binds and emulsifies comminuted fish foods. Salmon patties, loaves, and croquettes made with peanut flour exhibit excellent texture.

Peanut flour not only enhances vegetable flavor, but also brightens the color of some products such as carrots. In corn custard, for example, a toasted or roasted corn flavor is obtained.

In soups, peanut flour provides several benefits. Pea, tomato, and lentil soup flavors are enhanced by the ingredient. In the case of pea soup, peanut flour makes up for vegetable flavor lost during processing. Tomato soup attains a pleasant, unique flavor character. Furthermore, soups containing peanut flour exhibit thicker, smoother mouthfeel.

Meats: Peanut flour added to sauces glazes "finish" meat products. In meatloaf, the ingredient functions as a binder.

Cheeses: Thickening and emulsifying properties of the flour are advantageous in cheese spreads and dips. Ingredient flavor blends easily with these dairy products.

Currently, five types of peanut flour are available. Of them full fat flour contains 26.5% protein, 49% fat, 17.8% carbohydrate, 1.9% crude fiber, 2.3% ash, 2.3% moisture. Roasted flour contains 42% protein, 34.1% ash, fat, 1.2% moisture, 2.5% crude fiber and 20.2% carbohydrate. Also available are a peanut and soy flour blend, peanut flour mixed with whey, and peanut butter powder. Peanut flours generally are almost tasteless and odorless and may be used at levels offering significant savings. (Food Product Development. 12(10); 1978; 54)

129 Texturised soy protein

Soy protein with improved flavour, high protein content, high water absorption and improved textural integrity has been developed. It hydrates approximately 300 percent in cold water in 20 min. making it well-suited for use in meat plants where maintaining a cold environment is essential. (Processed Prepared Food. 147(6); 1978; 50)

130 Protein supplement for diet foods, beverages

Savortone 477 Calcium/Sodium/Caseinate, a dispersible milk protein source, is designed for protein supplements, diet foods and beverages, and pharmaceutical preparations. Ingredient offers a readily dispersible protein source (94% protein min.) with bland flavor, good mouthfeel and heat stability, and increased density. In addition, its protein is nutritionally complete containing all the essential amino acids and meeting government PER standards for high quality. (Food Product Development. 12(10); 1978; 46,50)

131 Freeze - dried expresso coffee

Freeze-dried expresso coffee will be introduced to the American market in November of this year. It will be available in two types of packages. Single-serving foil pouches are packed 10 each to a 0.4-ounce (12g) box. There will also be a 1.7-ounce glass jar, which will make about 30 cups. (Food Engineering. 3(10); 1978; 22)

EQUIPMENT AND MACHINERY

132 Conveyor system withstands low temperatures

Conveyor system specifically designed for empty or lightly loaded boxes will operate in temperatures ranging from minus 200° to 250°F. The system uses a plastic chain and accommodates vertical and horizontal curves in a single conveyor. Other features include; chemical resistance, minimal required maintenance, no chain or roller tube, quiet operation and adjustable side guards for different container sizes. Conveyor modules are available with galvanized steel framework or with stainless steel as an option. (Processed Prepared Food. 147(6); 1978; 77)

133 Vertical conveyor

Spectoms offer a versatile vertical conveyor (Vertilift) for economical, efficient and dust-free handling of dusty, powdery and granular material. The machine avoids segregation of material and ensures dust-free conveying. There is no need to make holes in the floor or to dig pits for dump hoppers. The unit is offered in MS or SS construction. The conveyor is suitable for handling baking powder, flour, milkpowder, soap powders, starch, sugar and tea. (Industrial Products Finder. 7(3); 1978; 72)

134 Machine segregates materials by their conductivity

A separator, now available in laboratory and production models, utilizes high voltage electrostatic charges to remove contaminants from grains and processed foods. A mixture is fed on to a rotating drum, where it is exposed to a flow of electrons at potentials up to 50,000 volts. Conductive particles fall from the drum, while nonconductive particles are held against the drum by the electrostatic effect until rotation carries them out of the electrons flow and permits them to drop. (Food Product Development. 12(10); 1978; 78)

135 Vibratory sieving/grading machine

Vibratory sieving/grading machine is electrically operated and designed on the rotary vibration principle. The high-speed machine is suitable for wet and dry screening. A 3-phase TEFC motor imparts horizontal vibrations of high frequency to vibrating section, allowing even thick slurry to pass quickly through the screen. Easily replaceable screens of up to 400 BSS mesh size can be used. Mesh and aluminium alloy bowl can be easily cleaned. Working height is adjustable to enable graded material to be collected directly in storage bins. (Industrial Products Finder. 7(8); 1979; 49)

136 Sieving machine

The X-press sieve is a rotary sifting and straining machine ^{for plastic} ~~in~~ powder form. Material fed into the hopper passes through a rotary screen directly attached to the motor shaft which rotates within an aluminium casing fitted with a discharge spout. Output depends on particle size, agglomerations, and perforation or mesh size of screen. Foreign matter or hard-to-dissolve agglomerates remain in the lower part of the rotary screen, from where the residue is removed periodically. The machine may be used as a control screen in the chemical, pharmaceutical, cosmetic and food industries. (Industrial Products Finder. 7(7); 1979; 37.)

137 Horizontal multiple plate filter

The horizontal multiple plate filter is for batch/polish filtration. It consists of a number of horizontal plates, with filter media in between, housed in a vertical cylindrical pressure vessel. Filter media used include paper, pad and fabric. The vessel with cover in position provides a totally air-sealed system for the filter. The design permits last drop filtration to be carried out without the use of conventional scavenger plate. The filters are of sanitary construction and are available in steel and stainless steel. Diameter and number of plates can be varied depending upon the filtration

area required. The entire stack of plates can be removed as a unit and the filter can be provided with a jacket for cold or hot operation.
(Industrial Products Finder. 7(7); 1979; 51)

138 Sifter for hard to sieve products

A high capacity power sifter is specially designed for difficult-to-sieve products. The unit is made to sieve highmoisture content flour, powders, juices, pulps, wet starches and mashes, sticky spices and granular or slurry liquids. Large model sieves sift upto 50 tons per hour. All that is necessary to change sieve frames, is the removal of of one end cover. Sieve frame is snapped open and frame slides out. The sieve can be changed in less than 60 seconds.

Frames can be fitted with any kind of sieve-nylon, polyester, stainless steel, brass or phosphor bronze. (Processed Prepared Food. 147(6); 1978; 76)

139 Open-type mini centrifuge

Open type mini centrifuge machine model IDC 1 has been designed for routine qualitative and quantitative semi-micro, micro and macro analysis of chemical, clinical, pathological, microbiological, food, drug and soil samples. It can also be used for laboratory separation or extraction. The centrifuge is provided with an angle head which can take 4 Small tubes each of 5 ml capacity or two large tubes each of 15 ml capacity. It revolves at a speed of 2,000 RPM. The shock-proof, acid-proof, durable body is made out of polypropylene. Rubber gasket at the base is leak-proof. Equipped with a brushless motor, the machine is noiseless in operation. A plug and a push button switch are provided close at hand for easy operation. (Protein Foods And Nutrition Development Association of India. 19; 1979; 1)

140 Band saw blades

Band saw blades have been designed with several important features. Twist spring back is suited for bone, soft tissue and frozen

sawing. High flexibility promotes smoother pulley tracking, less stress when cutting and longer blade life. Precisely tempered steel combines flexibility and toughness for maximum sawing effectiveness. In addition, narrow tooth set will assure precise cutting efficiency. (Processed Prepared Food. 147(6); 1978; 77)

141 Steam brushing system for peeling

The machine peels and cleans up to twenty tons of carrots, potatoes, turnips, beets, sweet potatoes and apples per hour. The machine features a belt of 12 synthetic fiber brushes situated between the steam or lye peeler and the final washing unit.

Both the brush bearings and drive are protected against penetration of peelings, dirt and water. Material that comes into contact with the product is stainless steel. A built-in spray system simplifies cleaning of the system. (Processed Prepared Food. 147(10); 1978; 84)

142 Ham-boning line increases yield

High-efficiency ham boning line increases lean meat yield as well as overall yield from green hams, according to the manufacturer. The line is designed to meet industry needs for greater control over boning operations with a series of work stations established laterally along a slow-moving conveyor belt. Two hams are delivered in trays to each station where the worker proceeds to debone and disassemble the ham into lean meat, shank, fat and skin, bone and trimmings, when both hams are finished, the separated meat parts are placed in trays on a finished, the separated meat parts are placed in trays on a second conveyor for quality check by an inspector at the end of the line. (Processed Prepared Food. 147(6); 1978; 79)

143 Grinder for the kitchen

The grindmaster is an all purpose commercial grinding machine for use in the kitchen. It can be used for both dry and wet grinding. The maximum capacity is 4.5 kg. Hygienic and fast, the machine grinds food

grain, dry masala mixtures, coconuts, and wet mixtures preparations for idli, dosa, wada, chutney, curry, pickles and sauces to the required fineness. It can be adjusted to grind wheat, rice and other cereals into flour or rava. The machine churns butter and makes mixes for cakes. It is reported that almost any ingredient can be reduced to pulp or powder within 5 to 15 minutes, fully retaining its taste, flavour and vitamins. (Industrial Products Finder. 7(4); 1979; 3)

144 Micro pulveriser unit

The micro pulverisers provide maximum output with minimum power consumption and vibrations. With extraordinary power for particle size reduction, it pulverises, grinds and collects the output in one single operation. The machine works on pneumatic principles and therefore grinding is cool and frictionless, spare parts requirement is minimised because of special hammers which are carbide treated. Standard models are: 5 HP Jupital Cub, 10 HP Jupiter Junior and 20 HP Jupiter Senior. Applications are in chemical, pharmaceutical and food industries. (Industrial Products Finder. 7(7); 1979; 12)

145 Micronizer

The NDM micronizer, a special machine suitable for particle size reduction in one operation to 300-450 mesh of soft, medium and hard materials. There are no screens and adjustment of size is by Whizzer system. Operations involved are regulated feeding, grinding in a chamber lined with stainless steel chippers, classification by Whizzers, and finally a cyclone dust collector that allows particles less than 5 microns to escape. The machine finds wide application in the chemical, pharmaceutical and food processing industries. (Industrial Products Finder. 7(6); 1979; 50)

146 Homogenizer has non-contact sealing

The homogenizer is based on a high-pressure plunger pump with a non-contact sealing system that replaces the conventional packing. This

design eliminates friction normally occurring between collar and piston as well as the resulting losses due to friction and wear, thus ensuring high mechanical efficiency.

Suitable for all dairy products, baby foods, flavours, fruit pulps and similar products, the homogenizer is designed for three-shift operation. Several models can be supplied for flow rates from 720 to 120,000 l/h. Continuous operating pressures range from 50 to 1000-bar, and power rating from 0.73 to 730 KW are available. (Food Engineering; 3(4); 1978; 94)

147 New hullers for handling nuts

The California nut processing industry has been testing two new pieces of equipment. Both machines are now available to commercial food processors. One of them, the Model F Magnuhuller unit, is being used throughout the state for hulling filberts and hazelnuts. With certain roll modifications, the machine has the capability for hulling almonds, walnuts, and other nut foods. In the pistachio application, the Magnuhuller F is usually followed by a model H stemout machine for final removal of loosened hulls. The Magnuhuller has a capacity of 6,000 to 8,000 lb/hr on pistachios. (Food Engineering. 3(4); 1978; 90)

148 Drum mixer

A drum mixer which is of particular value where there is a frequent change of the product to be mixed or homogenised has been developed. Four types are available to suit drums from two gal to 75 gal. The drums have been designed to be simply exchanged so that they can be used for transferring the product. The hoop is designed for the dual purpose of mixing and conveying the drum. (Food Processing Industry. 47(562); 1978; 68)

149 Small dryers permit realistic studies

Dryers which are smaller and less expensive than typical pilot plant equipment, yet able to vary several important processing factors over wide ranges are available. The stainless steel equipment makes it

possible to obtain scale-up and product quality data without large scale experimentation.

The rotating tube dryer can be used for current or countercurrent drying. The feed rate can be varied up to 5 lb/hr, air temperature up to 500°F, and air velocity from 75 to 350 ft/min. Also variable are drum speed, angle, and flight configuration. A completely integrated unit requiring only connection to electric power, the dryer has outer dimensions of 4 x 2 x 3 ft.

A vertical pneumatic dryer, permits bench or pilot scale flash drying. It is available with optional recycling system for extending residence time, and it may be used as the primary or finish dryer in combination with rotary dryer. This vertical dryer processes a maximum of 5 to 20 lb/hr at air velocities up to 6,000 ft/min and air temperatures up to 1,300°F. It stands 5 ft long x 2 ft wide x 10 ft high. (Food Product development. 12(10); 1978; 78)

150 Speeds up freeze drying

A new heat control device greatly improves the reliability and speed with which substances can be freeze dried. The instrument called Edwards Resistivity Controller cuts drying time for some common products by more than half and renders obsolete the traditional methods of determining safe drying temperatures for complex substances and determines the lowest eutectic point of a substance (the temperature at which it completely solidifies) by monitoring its resistance, which varies with its physical state. (Food Manufacture. 53(7); 1978; 79)

151 Freezes pre-cooked food

Capable of efficiently freezing 45 kg of pre-cooked food from + 70 to -20°C in 90 min, this 10-tray freezer unit is designed to take either six 140 x 140 x 40-mm bulk foil packs or five half-gastronorm size containers.

Of timber-free construction with 105-mm foamed polyurethane insulation, the unit has loading and unloading doors at each end to provide pass-through facilities for a batch flow production catering system.

A 7.3 Kw air-cooled condensing unit maintains the high velocity air at a temperature of -32°C to give the essential rapid reduction of temperature necessary to maintain flavour, texture, appearance and nutritional value of the food. Automatic defrosting and dual temperature facilities are provided for overnight freezing. (Food Engineering. 3(4); 1978; 84)

152 Continuous fryers

The new PHL/Titan range of continuous fryers, has effective belt widths of the fryers, designed on a modular basis from standardised components, are 400, 630 and 1,000 mm and combiner with tank lengths between 1.6 and 3.2 m give a range of frying services from 0.6 to 3.2 m^2 .

Frying oil is continuously circulated through an easily cleaned filter element and heating may be electrical elements immersed in the oil bath or indirectly by means of a thermal oil in conjunction with a gas or oil fuelled heat exchange unit. For light products, which tend to float, the conveyor is fitted with paddles to control the flow through the oil; for very light products which need to be totally immersed a top belt is available. (Food Processing Industry. 47(558); 1978; 71)

153 Heat exchangers have new design

Scraped surface heat exchangers are designed for heating, cooling or crystalizing products from cooking and cooling apple sauce to slush freezing citrus concentrates. The units feature a mutator shaft within a four-inch diameter by 120-inch stainless steel heat transfer tube with removable stainless steel (steam or liquid) jacket. The liquid jacket can be sanitarily designed to allow heat interchange between two products. A carbon steel jacket for direct expansion refrigerant is also available. (Processed Prepared Food. 147(6); 1978; 79)

154 Juicer with a suction base

The juicer has a suction base that grips any smooth laminate surface on the table top. Its lightweight alloy base has been designed to be practical. A finger-tip screw control is included to detach the cup from the base for easy cleaning and washing. A stainless steel filter strainer is included. A handy flip-over lever activates the rubber suction cup. Uses are in industrial canteens, restaurants and kitchens. (Industrial Products Finder. 7(5); 1979; 73)

155 A rotary dewatering press

A rotary dewatering press capable of converting a fiber-containing slurry whose-solids content is as low as 4% into a cake having 40% solids has been introduced. The application is in the pressing of sugar cane, sugar beets, and fruit juices.

The slurry is fed between a corrugated master roll and four spring-loaded press rolls whose distance from the master roll decreases progressively from 1 inch to $\frac{1}{4}$ inch. Doctor blades transfer the solids from press roll to press roll and then to a conveyor belt, while the expressed liquid drains into the space below the press.

The rolls are 23 inches long. The master roll is four feet in diameter, and each press roll is two feet in diameter, they are all supported by sealed roller bearings, and require only periodic lubrication. Driven by a 50 horsepower motor, the speed of the master roll is variable from 0 to 5 rpm. Maximum throughput in 24 hours varies from 45 to 100 tons, depending on the material being processed and the degree of dryness required in the cake. (Food Engineering. 3(10); 1978; 113)

156 Improved Distillation Still

The conventional distillation stills used for the extraction of oil from essential oil bearing plants are not highly efficient. In these stills distillation has to be carried out for longer periods costing more energy and the recovery of oil is only 60-70% of the total oil content.

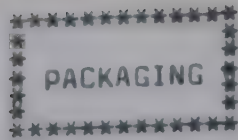
In order to overt these draw-backs, the laboratory developed a new type of distillation still. The still has been designed keeping in view the dimensional proportionality. A new type of steam injector is incorporated in this steam jacketed still to effect better distribution of steam through the plant materials. A condenser on the lid is also fitted to ease the operation. The improved still yields about 90% of the total oil and cuts down the distillation time by 30%. (Regional Research Laboratory (Jorhat) News. 2(14); 1978; 3)

157 Weighing & Filling Machine

The weigher-filler is a precision semi-self indicating weighing machine. Compensating mechanism for material-in-flight ensures pre-cession filling with high accuracy. The solid-state electronic control system is accommodated in a compact panel. All functions are neatly and separately arranged on individual boards (modular design) to guarantee easy service. The weigher-filler can be used in chemical, cosmetic and food industries. Capacity ranges from 1 to 300 kg. The machine features dual speed and slow filling for accuracy. (Industrial Products Finder. 7(6); 1979; 31)

158 Fume and gas detector alarm

Fume and gas detector alarm is capable of detecting various explosive and toxic gases of the hydrocarbon group and their derivatives, alcohols, inorganic gases, esters, ethers, halogenize hydrocarbons and cooking gas. Choose LEL or TLV levels for a particular gas to be detected and the instrument gives an alarm, visual and audio, for early warning. (Industrial Product Finder. 17(1); 1978; 239)



159 Fibre drums replace steel drums

Warden's fibre drums are made from a combination of several plies of concentrically wound paper or board. The low-cost Warden drums replace steel drums and reduce freight charges. The bottom consists of a plywood disc fastened into position by a metal ring. A similar detachable disc at the top provides the covering. The lid is held down by a metal clamp, or locking ring, which is provided with a clasp for sealing. The drums can be waxed or varnished or both waxed and varnished to make them water-proof. Painting and printing can be done to enhance visual appeal. The drums are recommended for packing granules, flakes or powder. Pastes and liquids can also be packed when used with flexible or rigid polythene liners. Sizes range from 30.5 cm to 45.7 cm diameter. The height goes up to 106.68 cm. (Industrial Product Finder. 17(1); 1978; 239)

160 Insulated fish boxes

The marine products export development authority is proposing to popularise small insulated fish boxes of the capacity of 56 kg. These are suitable for storage and transport of fish and shrimp in ice. The particular design now offered for insulated boxes has been evolved after a series of field trials of different models. It has been decided to supply these boxes at half the cost. The authority is implementing the scheme in a bid to improve the quality of raw material received in processing plants.

One of the easiest and most widely used methods for keeping fish and prawns in a fresh condition is keeping them in ice. It is known that the rates of spoilage of fish at 5.5°C is twice as fast as at 0°C and at 12°C is four times as fast as at 0°C. (Indian Seafoods. 13(4) & 14(1); 1978; 31)

161 Semi-automatic capping machine

The new dual head filamatic model AUA-120-2 table model, semi-automatic capping machine is designed for tightening plastic or metal screw caps two at a time. Caps of up to 120 mm size can be tightened to a predetermined torque by merely placing two containers with the caps loosely installed in position on an adjustable nesting type holder. A footswitch triggers the operating mechanism. The two capping chucks descend, tighten the cap, then return to starting position, ready to repeat the cycle. The capper operates only when two containers are correctly positioned under the chucks. The cycle will not repeat itself until the capped containers are removed and replaced by two more containers. (Industrial Product Finder. 7(3); 1978; 17)
Finder. 7(3); 1978; 17)

162 Peel-off lid for food cans

A new "peel-off" lid for food cans has just been developed by Alusingen, the German subsidiary of Alusuisse. The lid is reportedly a new solution to the problem of easy opening of cans. The overall membrane lid consists of an upper surface of lacquer, a central layer of aluminum foil, a proprietary middle layer and a final thermoplastic layer. This is a polyamide, where the package must be sterilized or "Surlyn" ionomer resin where there is no sterilization. The stock is also embossed for added strength. (Food Packaging And Labeling. 2(9); 1978; 1)

163 Vacuum gassing turret designed for canning milk powder

A vacuum gassing turret (Model VBK 556/73) is especially constructed for canning milk powder. Developed for a Dutch producer of milk powder, the machine is designed to give higher output with few operators.

The Model is a complete plant comprising essentially a clinching machine, one or more vacuum gassing turrets (according to desired output), final seamer and additional units such as collection

tables and conveyors. The turret can handle all can sizes standard to the work milk powder industry and features a patented guidance system that permits careful handling of containers. That avoids dents, scratches and marring of the filled cans.

The special feature of this milk powder canning unit is its flexibility. Several turrets can be combined into a complete canning line to increase production. And, since pre-evacuation in large containers is no longer necessary, fresh milk powder can be handled without preliminary treatment. (Food Engineering. 3(4); 1978; 75)

164 Plant makes blown film for milk pouches

Brimco have developed two types of plants for producing blown film used for manufacturing milk pouches. The plants of types BRMP and BRCE, produce polyethylene sheets. They are complete with aluminium rotating air cooling rings, included to reduce thickness variation in the blown film. To further stabilize the thickness of the film, rotating die and related equipment can be used which are offered as optional extras. This eliminates bulging when the film is wound in the winder. Models BRCE-50/2 and BRCE-65/2 co-extruded blown film plants can be mounted on revolving platforms, so that during operation they become revolving extruders. They are used to produce two different layers of film, one from each extruder, which can be in two different colours and which are moulded into one blown film before it goes to the winder. Besides LDPE-HDPE, nylon and polypropylene can be extruded. (Industrial Product Finder. 7(7); 1979; 65)

165 First high-speed tetrahedral pack system for soft drinks

A new HT-150 high speed TETRA PACK Cartoning machine for their range of Calypso soft drinks has been designed.

Four separate units have been installed, each with a capacity of 7,200 cartons/hr. Tetrahedral packages are produced from pre-printed paper/plastic laminate reels, each containing approx 7,500 cartons. Sealing is below the liquid level and this produces an air free package

which helps to keep the quality of the product. The packaging unit applies a strawhole to each carton with an easy open pull-tab.

This new packaging installation has removed the need for manual packang and has increased the output to around 20 boxes/min. The finished cartons have a capacity of 150 ml and the opportunity has been taken to introduce a new surface design. (Food Processing Industry. 47(562); 1978; 73)

166 Confectionery twist wrapper

A new double twist wrapper for confectionary with a double disc feed system is claimed to have increased output by 10 percent over its forerunner and permits radial alignment of the feed pockets with an increased number available for feeding, making it simpler and highly accurate.

A new wrapping material feed and knife system widens the choice of materials which can be used, and these now include polypropylene, cellulose films and waxed papers. Machine speed is variable from 300 to 500 cycles per minute. (Food Processing Industry. 47(562); 1978; 68)

167 Prepac sachet filling machine

The first prepac sachet filling machine manufactured in India is undergoing prescribed tests and inspection. This machine incorporates all the recent developments and would be a boon to the liquid milk dairies in India. The first machine, will be installed in Dudh Sagar Dairy, Mehsana, Gujarat. (Indian Dairyman. 31(1); 1979; 67)

```
*****
*
*
* ANALYSIS *
*
*
*****
```

168 System speeds assay of ingredient protein

Equipment utilizing the Udy Dye Method gives protein value with a standard deviation from the Kjeldahl value of 0.2% or less. The dye binding method, approved by AOAC and AACC, provides economical estimation

of protein applicable to unaltered, sound commodities. The Udy Protein Analyzer with direct, digital readout of percentage protein avoids the necessity of using hazardous chemicals. (Food Product Development. 12(8); 1978; 96)

169 Instrument runs 20 specific sugar assays per hour

A new instrument utilizes a proven clinical laboratory method to measure sugars important in food industry applications. Quicker and easier than gas or liquid chromatography, the method is more specific than conventional tests based on optical properties, solution density, or chemical reducing power. The simple, 3-step operation requires minimal sample preparation to quantify sugar level in practical units 60 seconds after the sample is injected. (Food Product Development. 12(7); 1978; 78)

170 Oil and fat analysis in solid products

The Foss-Let oil and fat analyzer performs rapid oil or fat determination in solids. A sample is placed in a reaction chamber and perchlorethylene is added as an extraction carrier. The chamber is inserted into the vibrating reactor for a period of one and one-half-to-two minutes, during which time the sample is subjected to a powerful grinding action. After this is completed, the liquid is filtered into a measuring unit where the specific gravity of the oil/perchlorethylene mixture is measured. This measurement is converted directly into oil or fat percentage using a conversion chart. (Processed Prepared Food. 147(8); 1978; 116)

171 Fast test for unsaponifiabiles

A new method for unsaponifiable matter (USM) in fats and oils can give results in one hour rather than the six to eight hours required for current official methods. The simplified method, named "dry saponification technique", has advantages of being quantitative and reproducible and uses no flammable solvents. It can be followed by a technician with little or no scientific background.

Eastern Regional Research Center developed the technique and applied it successfully to many fats, including coconut, corn, cottonseed, peanut, olive, safflower, soy, cocoa, butter, lard, nerring, and whale. (Food Product Development. 12(8); 1978; 96)

172 Fast test quantifies solid and liquid fat, free and bound water

Two compact, economical instruments from the Praxis Corporation employ pulsed nuclear magnetic resonance (PNMR), a nondestructive method able to determine both quantity and physical state of water or fats. They have application in quality control for grain-based, dairy, and meat foods.

The analyzer can determine moisture level and distinguish between free and bound water in $\frac{1}{2}$ to 2 minutes. The unit helps predict emulsion stability since emulsion destabilization causes changes in the PR-103 reading long before visible phase separation occurs.

When running numerous solid fat content (SFC) determinations for specification, acceptance testing, process control, or troubleshooting with fats and oils, the SFC-900 analyzer can cut analytical time by one-third. A technician could determine SFC for up to 60 samples per day as against 20 samples per day with the conventional dilatometry.

Operation of the Praxis instruments is simple and fast because there is no need to weigh and usually no need to prepare the sample before it goes into the tube for measurement. PNMR measurements can be made with equal ease on solids and liquids, and samples can be stored for retesting later, since the analysis does not degrade them in any way. (Food Product Development. 12(8); 1978; 88)

173 Quick moisture tester

This low-cost unit measures moisture in ground samples by means of evaporation, using infra-red light rays. It is said to perform a moisture test in 3 to 10 minutes, depending on the test material. Accuracy is reported to be $\pm 2\%$ over the full range of 0-100% total solids. (Food Engineering. 3(10); 1978; 110)

174 Meter for measuring moisture

Key feature of this instrument is a builtin microprocessor which enables direct readings of relative humidity and dewpoint without the use of psychrometric charts or complex calculations, over a temperature range from -30 to $+100^{\circ}\text{C}$.

Measure values are indicated on a digital readout with an accuracy of $0.1\text{ K} \pm 1$ digit. Calculation accuracy for both relative humidity and dewpoint is better than 0.01% .

Suitable for use throughout industry, the portable, battery-operated instrument comes complete with psychrometric meter including linearizing circuit and fan to ensure adequate air velocity. It is particularly useful in environmental chamber applications and wherever rapid and highly accurate moisture and dewpoint measurements are imperative.

Dimensions of the instrument are $125 \times 170 \times 55\text{ mm}$ and its weight is 1.2 kg . The 12-V NiCd-battery allows approximately 200 measurements to be made before recharging. (Food Engineering. 3(4); 1978; 78)

175 Senses humidity at high temperature

Model 1220 Thermally Controlled Dew Point Sensor Unit mounted in a cabinet is capable of controlling temperature between 80 and 200°F . The NBS traceable sensor operates over a dew point range -60 to $+200^{\circ}\text{F}$ with $\pm 0.4^{\circ}\text{F}$ accuracy. The sensor can be employed with any General Eastern Series 1200 Dew Point Hygrometer. (Food Product development. 12(10); 1978; 85)

176 Automatic colony counting

The Biotran II provides almost instantaneous enumeration of a wide variety of colonies on many different kinds of agar plate. Equipped for reflected, transmitted, and dark field illumination, the instrument can count colonies or particles even on such media as opaque agar or a

filter. It detects objects as small as 0.2 mm and with visual contrast as low as 20 percent. Subsurface and slightly irregular colonies typically are included in the count. Accessories permit microscopic counting and counting in specialized containers. Mechanical and electronic masking, directly calibrated in mm offers the option of scanning only part of a plate. Particle size discrimination eliminates from the count all objects with an apparent image smaller than the minimum size, selectable over the range of 0.1 to 1 mm. (Food Product Development. 12(10); 1978; 85)

177 Sedimentation test mixer

This test mixer determines the sedimentation value for wheat flour in accordance with IS: 4782-1968. It is used by bread and biscuit manufacturers as well as flour mills. The device reportedly gives a simple and quick indication of the strength of wheat flour and predicts its stability for baking. Amongst other tests available for wheat flour the highest correlation coefficients have been established by USDA for the sedimentation test. This test will help in selecting suitable varieties of wheat for making good bakery products and also for segregation of wheat flour. As laid down in the standards, the test mixer has a rack to accommodate eight measuring cylinders of 100 ml size and the rack can be put in motion at 40 strokes per minute, 30° each side of the horizontal. A process timer is fitted with the mixer to stop the motion automatically at the end of a cycle. To add further chemicals while test is carried out, it is not necessary to take out measuring cylinders, as means are provided to bring cylinder in vertical position to accept the chemicals. (Industrial Products Finder. 7(8); 1979; 25)

178 Meter checks freshness of fish

The GR Torrymeter (developed in the UK) is a compact, robust, all electronic, reliable and portable instrument designed to assess the quality as related to freshness of the fish. The dielectric properties of fish tissue change progressively during the post rigor period of storage. The Torrymeter responds to the dielectric loss angle, thus

providing an accurate measurement of the freshness of fish. The instrument is held in hand and brought in contact with the fish's surface. The digital display gives an indication of tissue deterioration. It is capable of both single shot operation and batch assessment. The unit is housed in a sealed case moulding and can be wiped clean or even rinsed in water. It is battery operated and equipped with long life rechargeable cells. (Protein Foods and Nutrition Development Association of India. 23; 1979; 1)

179 Head Space Sampler

The HS-6 Space Sampler for gas chromatography recently announced by Per-Kin-Elmer has been designed for use with the company's Sigma series instruments and enables them to perform semi-automatically head space analyses. It is available as a factory installed option or can be retrofitted to existing instruments.

The system has a capacity of six samples providing adequate time for temperature equilibrium to be reached. Samples can be either solid or viscous liquids. Five second injection time is controlled automatically and the HS-6 sample is thermostatically controlled to better than 0.1°C over a temperature range of $+40^{\circ}\text{C}$ to $+190^{\circ}\text{C}$. (Food Manufacture. 53(11); 1978; 37)

180 Automatic Karl Fischer titrator

The automatic titration apparatus is for rapid, accurate and easy determination of moisture (water) in samples by the Karl Fischer method. It finds applications in petrochemical, pharmaceutical, food processing and chemical industries. The device is suitable for carrying out increased number of titrations per hour, thus reducing operator's time. Special features include automatic filling and zero adjustment of burettes, sealed beaker, solenoid operated burettes, facility for back titration, and visible as well as audible end-point indication. (Industrial Products Finder. 7(5); 1979; 37)

181 Chemically inert filter fabric

Proplon is a chemically inert textile fibre which is resistant to alkalis, acids and organic solvents. It is reported to have no solvent at room temperature. Applications are in the manufacture of chemicals pharmaceuticals, dyes and pigments, and food products. (Industrial Products Finder. 7(5); 1979; 23)

```

*****
**                                     **
**   ECONOMICS & COMMERCIAL          **
**   STATISTICS                     **
**                                     **
*****

```

182 Per hectare yield of oil seeds in major producing countries.

(Yield in Kilogram)

Year 1976	Ground- nuts	Rape- Seed	Linseed	Sesamum	Castor- seed
Country:					
India	814	577	290	183	394
China	1271	488	442	426	340
America	2763	1133	484	706	265
Canada	-	1158	839	-	-
Sudan	1248	-	-	332	913
Senegal	895	-	-	-	-
Poland	-	2743	461	-	-
Argentina	1094	583	899	-	1082
World	957	836	422	308	506

(Oils and Oil Seeds Journal. 31(2); 1978; 33)

All India Final Estimate of Niger Seed 1978-79

State	Area (Thousand hectares)	Production (Thousand tonnes)
Andhra Pradesh	15.1	14.6
Bihar	52.6	20.7
Karnataka	59.0	10.3
Madhya Pradesh	262.7	38.3
Maharashtra	102.4	18.0
Orissa	127.9	48.4
Dadar & Nagar Haveli	0.7	0.3
All India	620.4	150.6

- Notes:- 1. Nigerseed crop is not grown to any appreciable extent in other States and Union Territories not mentioned above.
2. No information regarding crop estimates is yet available from the Govt. of Sikkim.

Source: Directorate of Economics and Statistics, Ministry of Agriculture and Irrigation, Dept. of Agriculture, Government of India, New Delhi.

Estimated Production of Copra and Coconut Oil in India

Year	Copra (Tonnes)	Coconut oil (Tonnes)
1975-76	381,497	202,670
1976-77	388,958	220,975

Of the copra produced in India, 10-15% are used for edible purpose and the balance for oil extraction. (Oils and Oilseeds Journal. 31(2); 1979; 34)

Production of Tree borne oilseeds in India (Quantity in Tonnes)

State	Shorea robusta (Sal)	Bassia latifolia (Mohua)	Azadirachta indica (Neem)	Pongamia glabra (Karanja)	Hevea brasiliensis (Rubber)	Salvadora oleoides (Khanan)	Schleichera triunguis (Kusum)	Vateria indica (Dhupa)	Mesua ferrea (Nahor)	Calophyllum inophyllum (Undi)	Garcinia indica (Kokum)	Other seeds
Andhra Pradesh	-	-	6400	11500	40000	-	-	500	-	-	-	R
Assam	172478	-	-	-	-	-	-	403	5650	-	-	K
Bihar	3855022	147353	14130	46227	-	-	42000	-	-	-	-	M, Pa
Goa	*	-	*	-	-	-	-	-	-	*	*	
Gujarat	-	15162	19697	3121	-	31488	-	-	-	-	-	
Haryana	-	-	11287	-	-	-	-	-	-	-	-	
Karnataka	-	1896	18804	598	-	-	-	197	10000	542	650	M, KR, Pa
Kerala	-	300	-	*	45000	-	-	-	2150	2333	*	M, Pl
Madhya Pradesh	42500	41260	2075	379	-	-	-	300	-	-	-	R, Pa
Maharashtra	-	5046	26397	4211	-	-	-	-	-	*	1350	M, R, P, Pa
Orissa	1400000	10000	1000	3000	-	-	-	190	*	*	*	
Punjab	-	-	-	-	-	-	-	-	-	-	-	
Rajasthan	-	3500	32000	350	-	12182	-	-	-	-	-	R, K, M
Tamilnadu	-	5000	37000	1920	5000	-	-	-	-	725	-	
Uttara Pradesh	-	247578	210110	*	-	-	-	-	-	-	-	
West Bengal	40000	6500	230000	6000	-	*	-	-	-	-	-	Ch, K
Total	5504000	490000	418000	11000	50000	43670	43000	10000	7800	3800	2000	

Index: *Available in small quantities

Total: 67,30,800 tonnes

K: Kamala R: Ratanjyoti Ch: Chura M: Maroti Pa: Palashpi Pi: Pisha

(Oils and Oil seeds Journal. 31(2); 1978; 31)

Potentialities of some minor oilseeds and cakes in India

Name of the Seed	Potential States	Season of Collection	Seed in tons		Oil in tons		Cake in tons	
			potential	Utili- sation	Potential	Utili- sation	Potential	Utili- sation
Kokum (Garcinia indica)	Karnataka, Goa, Maharashtra, Kerala	May-June	2,000	500	800	200	1,000	300
Nahor (Mesua ferrea)	Assam, Bengal Kerala, West Bengal	June-July	5,700	110	2,300	60	4,000	50
Dhupa (Vateria indica)	Karnataka, Kerala Maharashtra	May to August	10,000	4,000	1,000	400	7,000	3,500
Undi (Calophyllum inophyllum)	Kerala, Goa, Orissa, Bengal.	July-August	3,800	600	2,300	300	2,000	300
Rubber (Hevea brasiliensis)	Kerala, Tamilnadu, Karnataka, Tripura, Assam, Andaman.	August to November	50,000	23,000	12,000	580	40,000	1,700
TOTAL:			67,30,800	292,943	10,36,400	66,330	49,54,000	222,000

(Oils and Oilseeds Journal 31(2); 1978; 31)

187

Production of cotton seed oil and meal

(thousand tonnes)

Year	Oil		Meal	
	India	World	India	World
Sept. - Oct.				
1976 - 77	202	2745	930	9102
1977 - 78	225	3010	1035	9914
1978 - 79	-	2900	-	-

(Oil and Oil Seeds Journal. 31(2); 1978; 33)

188

Production of raw cashewnuts - statewise

States	Area (000 hectares)	Production (000 tonnes)
Kerala	103	116
Karnataka	96	36
Tamilnadu	93	13
Other States (Andhra, Orissa, Goa & Maharashtra)	128	28
Total	420	193

Source: The Kerala State Cashew Development Corporation Ltd.,
(Industrial Development News 13(12); 1979; 175)

189 Cashew

A project for the development of cashew plantations in Karnataka is proposed to be implemented by the Karnataka Cashew Development Corporation and the Department of Horticulture with World Bank assistance. The project envisages an outlay of Rs.17.26 crores.

The project contemplates raising 10,000 hectares of new cashew

plantation and improving the existing 12,000 hectares of departmental plantation through the Cashew Development Corporation. The area of operation of this project would be districts of Dakshina Kannada, Uttar Kannada, Shimoga and Coorg.

Under the Project, 4,000 hectares each would be taken up under new plantation in Dakshina Kannada and Uttar Kannada districts. One thousand five hundred and 500 hectares would be developed in Shimoga and Coorg districts respectively. (Industrial Development News. 13(10); 1978; 125,126).

190

All India final estimate of Cardamom, 1978-79

State	Production in terms of Dried, Cured Cardamom (Thousand Tonnes)
Karnataka	2.6
Kerala	1.5
Tamil Nadu	0.5
All India	4.6

Notes:- 1. Cardamom is not grown to any appreciable extent in other states and Union Territories.

2. No information regarding crop estimates is yet available from the Government of Sikkim.

Source: Directorate of Economics and Statistics, Ministry of Agriculture and Irrigation, Dept. of Agriculture, Govt. of India, New Delhi.

191 Availability of pulses in India

A survey conducted by Economic Times Research Bureau indicated that on the basis of a daily requirement of 2,350 calories and a daily protein requirement of 44.3 grams, the recommended daily cereal intake is 370 grams and the requirement of pulses and nuts is placed at 65 to 80 grams, provided vegetarians supplement their diet with 241 grams of

milk and milk products and non-vegetarians with 154 grams.

The average (vegetarian and non-vegetarian) daily intake is 70 grams of pulses.

Daily per capita Net Availability of
Foodgrains (in grams)

Year	Cereals	Pulses	Total
1976	406.6	51.2	457.8
1977	395.4	43.3	438.7

(The Economic Times. May 16, 1979)

- 192 Consumption of oils and fats in the manufacture of Soaps
Produced by Organised Sector during 1976.

Item	Quantity (in Tonnes)
- Coconut oil	6047
Hard oils	-
Palm oil	3176
Tallow	5896
Mohua oil	16053
Sal oil	1696
Neem oil	5004
Kusum oil	-
Hydrogenated vegetable oil	-
S.E. Groundnut gr.II	21169
Castor oil	11440
Linseed oil	11508
Karanja seed oil	332
Tobacco seed oil	-
Watermelon seed oil	-

(Contd....)

Other oils	-
Rice bran oil	37996
Fatty acids	1285
Kusum oil	2366
Soft oils	-
Rice bran oil	11264
Groundnut (raw grade. II inedible)	5187
Rice bran oil fatty acids	-
Acid oil	4655
Soap stock	5585
Other oils & fatty matter	-
Raw linseed oil	609
Cottonseed oil	-
Castor oil	456
Other oils	722
Rosin	5684

(Oils and Oil Seeds Journal 31(2); 1978; 34)

193

Trade estimate of marketable surplus of new crop
Groundnut Kernels During 1978-79 Crop year (Nov./Oct.)

State	Total Marketable Surplus in Groundnut Kernels (In Lakh Tonnes)
Gujarat	11.00
Andhra Pradesh	5.50
Tamil Nadu	4.00
Maharashtra	3.75
Karnataka	3.25
Uttar Pradesh	1.50
Madhya Pradesh	1.50
Rajasthan	1.00
Punjab-Haryana	1.00
Others	1.00
Total	33.50

(The Oils and Oil seeds Journal. 31(2); 1978; 23)

194

Use of vegetable oils in the
manufacture of Paints and
Varnishes during 1976-77.

Name of the Oil	Quantity	
Linseed oil	3610	Tonnes
Castor oil	814	"
Pine oil	127	"
C.N.S.L.	190	"
Bhiawan	150	"
Kardi oil	220	"
Tung oil	106	"
Misc. (Tobacco, etc.)	1050	"
Coconut oil	306	"
Total	6573	"

(Oils and Oilseeds Journal. 31(2); 1978; 34)

195

State-wise distribution of oil
mills in India

State	1975
Andhra Pradesh	527
Assam	N.A.
Bihar	1,456
Gujarat	1,208
Kerala	N.A.
Madhya Pradesh	2,963
Tamil Nadu	1,386
Maharashtra	1,689
Mysore	62
Orissa	N.A.
Punjab	N.A.

(Contc...

Rajasthan	2,000
Uttar Pradesh	4,293
West Bengal	623

Total	15,339
-------	--------

(Oils and Oilseeds Journal. 31(2); 1978; 34)

196

Oil Refining Industry in India

Refining Units	62
Installed Capacity	2000 tonnes per day
Investment	Rs. 2000 Crores
Skilled Workers	3,000 to 4000
Unskilled Workers	25,000 to 30,000

(Oils and Oilseeds Journal. 31(2); 1978; 34)

197

Percentage of oil left in cakes on a 5% M.C. Basis

Expeller groundnut cakes	5%	11.6%
Ghani groundnut cakes	8.4%	11.6%
Sesamum ghani cakes	10%	18.4%
Sesamum rotary cakes	10.7%	12.4%
Castor expeller cakes	6.7%	7.9%
Castor ghani cakes	7.1%	9.7%

(Oil and Oilseeds J 31(2); 1979; 33)

198 Molasses and Ethyl Alcohol Exports Decanalised

The exports of molasses and ethyl alcohol has been decanalised.

The Commerce Ministry today put the exports of molasses, ethyl alcohol or rectified spirit under open general licence. The exports of these items were hitherto canalised through the State Trading Corporation.

The exports of these items will now be allowed under OGL on production of clearance certificate issued by the Commissioner of excise of the State in which the product to be exported has been manufactured. The same applies to the exports of rectified spirit of any proof degree whether de-natured or not.

The exports of the above mentioned products will be allowed only for shipments to be made on or before June 30. The ministry made it clear that no shipment will be allowed after that date even in cases where the prospective exporters might have entered into firm deals.

The Commerce Ministry was under pressure for some time now from the main sugar cane growing States like Bihar, Uttar Pradesh for decanalising the exports of molasses. The States apprehended that in view of the bumper cane crop the Government should encourage the exports of these by-products of sugar.

It was also pointed out by the States that STC was not putting its best to increase the exports of molasses, The ministry of Petroleum and Chemicals too had backed the demand of the States for decanalisation. (Indian Sugar. 28(9); 1978; 595-596)

199 Fish meal exports

As per a new notification, the Government of India have allowed free export of fish meal with protein content of 60% or above without quantitative restrictions. Fish meal with protein content of 50% and above but less than 60% will be allowed to be exported within a limited ceiling. (Seafood Export Journal. 10(12); 1978; 37)

Imports of raw cashewnuts

Year	Imports	
	Quantity (000 tonnes)	Value (Rs. lakhs)
1975-76	137.20	5355.8
1976-77	75.12	1833.0
1977-78*	60.19	1872.0

*Provisional

Source:- D.G.C.I. & S., Calcutta Customs Houses.

(Industrial Development News. 13(12); 1979; 175)

201

Exports of Oilseeds, Oils and Oilcakes from India (April 1976 to March 1977)

	Quantity (tonnes)	Value (Rupees)
Oilseeds		
Groundnut Kernel H.P.S.	1,22,806	59,39,53,734
Groundnut Shelled H.P.S.	1,35,539	58,24,15,878
Mustardseed	12	55,956
Nigerseed	9,441	2,46,69,028
Sunflowerseed	2,547	38,53,842
Sesamum	276	5,06,570
Total	2,71,621	1,27,54,56,203
Oils		
Groundnut Oil	2,905	1,68,30,909
Sunflowerseed Oil	53	2,38,930
Mustard Oil	64	1,45,468
Linseed Oil	42,087	16,11,44,000
Castor Oil	174	15,13,428
Other Oils	6	15,402

(Contd.....)

Castor Oil	40,961	22,02,39,795
Mourra Oil	151	17,60,708
Tobacco seed Oil	31	42,02,696
Kokum Oil	242	48,92,167
Sal Oil	1,833	2,44,30,084
Others	1,640	1,46,99,698
Hydrogenated Groundnut Oil	1,070	86,73,716
<hr/>		
Total	96,057	49,31,32,778
Oilcakes		
Deoiled Rice bran	4,10,817	23,14,43,377
Decorticated Cottonseed Oilcake	65,127	8,52,24,235
Undecorticated Cottonseed Oilcake	5,755	66,56,797
Linseed Oilcake	25,867	2,97,66,169
Nigerseed Oilcake	18	52,151
Sesamum Oilcake	1,341	16,05,777
Other Oilcake & Oilcake meal	2,683	27,67,335
Solvent Extracted Copra Oilcake	4,686	34,81,595
Solvent Extracted Groundnut Oilcake	12,34,417	1,68,39,43,999
Solvent Extracted Linseed Oilcake	1,21,133	14,14,59,100
Solvent Extracted Decorticated Cottonseed Oilcake	1,00,435	12,39,77,574
Solvent Extracted Undecorticated Cottonseed Oilcake	2,155	19,45,172
Solvent Extracted Kardi Oilcake	43,767	2,82,32,733
Solvent Extracted Niger Oilcake	11,013	95,60,480
Solvent Extracted Sesamum Oilcake	5,774	89,65,217
Defatted & deoiled Oilcake meal	1,02,858	11,05,00,244
Compound animal feed	45,863	6,26,68,973
<hr/>		
	21,83,709	2,63,22,50,927
<hr/>		

202 Cash aid for Exports

The Union Cabinet has decided that the rates of cash assistance for exports would be fixed in multiples of 2.5 and that they would generally vary from 5 to 20%. It has also been decided that while fixing the rates the need to compensate for discriminatory freight rates and to stabilize prices of each important agricultural commodity shall be taken into account.

The Cabinet has asked the Commerce Ministry to ensure that cash assistance is not ordinarily given for traditional exports with established markets. Further, cash assistance should be subject to periodical reviews by committees, which must meet every two months.

Based on these decisions, the Commerce Ministry has announced rates of assistance for 61 items. Rates in respect of another 76 items have been finalized and will be announced soon. (Industrial News Digest 2(5); 1979; 6)

203 RBI Relaxes restrictions on trade with Pakistan

The Reserve Bank of India has relaxed its restrictions against opening and advising of letters of credit by banks in India in regard to trade between Pakistan and India. Accordingly henceforth, any authorised dealer in foreign exchange in India may open letters of credit in a convertible currency against imports from Pakistan to India or advise letters of credit opened in a convertible currency against exports from India, subject to the normal Exchange Control regulations being observed. (Indian Sea Foods. 13(4) & 14(1); 1978; 32)

204 Trade and payments agreement with people's Republic of Bulgaria

A new Trade Agreement with people's Republic of Bulgaria has come into force on January 1, 1979 and will remain valid initially for a period of three years upto December 31, 1981.

The Trade Agreement envisages that all trade and payments transactions between India and Bulgaria from January 1, 1979 shall be

concluded and settled in any freely convertible currency mutually agreed upon between the individual contracting parties in accordance with the foreign exchange laws, rules and regulations of the two countries. However, payments falling due after December 31, 1978 in respect of all export/import contracts/agreements concluded between India and Bulgaria before January 1, 1979 will continue to be implemented in non-convertible Indian rupees in accordance with the terms of the relevant contracts other than those on deferred payment terms of the relevant contracts other than those on deferred payment terms, shall be completed before December 31, 1979. If some contracts/agreements concluded before January 1, 1979 still remain unsettled on December 31, 1979, the two Governments may mutually agree on the dates by which these contracts/agreements shall be settled. (Spices News letter. 13(3); 1979; 7)

205 Trade promotion office at Tokyo

The Marine Products Export Development Authority has opened a Trade Promotion Office at Tokyo. Mr. R.R. Singh till recently under Secretary to the Government of India in the Ministry of Commerce, New Delhi, has assumed office as Resident Director. The address of the office is as under:-

The Trade Promotion Office,
MPEDA, Third floor,
No.1, Marutaka Building,
6-16-12, Ginza, Chuo-Koku,
Tokyo.
Tel.No. 363-0435

Japan is the largest market for Indian frozen shrimp. During 1977-78 Indian's exports of Shrimp to Japan were of the order of Rs.1,090 million. Next to Iron ore, frozen shrimp is the largest export commodity from India to Japan. (Indian Seafoods. 13(4) & 14(1); 1978; 31)

206 DCCI & Office at Gauhati

Office of the Deputy Chief Controller of Imports and Exports, Gauhati (Assam) has started functioning with effect from 14th February, 1979. The address of this office is as under:-

Office of the Deputy Chief Controller of Imports & Exports,
Kajgarh Road, Gauhati-781 003.

(Spices News Letter. 13(3); 1979; 7)

* FOOD LEGISLATION, QUALITY *
* CONTROL AND HYGIENE *

207 Standards of weights and measures rules

The date of implementation in respect of the new provisions of the Standards of Weights and Measures (Packaged Commodities) Rules, 1977 has been extended by a further period of six months. Consequently, these provisions which were to come into force on February, 1, 1979, would now become operative from August 1, 1979.

These provisions relate, among others, to packaging in retail rationalised standard quantity, area of the principal display panel and size of the letters used in the mandatory marking, prohibition of deceptive packages and of the use of vague and misleading nomenclature such as, 'Jumbo', 'giant', 'king' etc., This extension has become necessary to enable the Government to examine in depth the various representations on the Rules received from different sectors of trade and industry and take a final decision on them.

It is recalled that the other provisions of the Rules relating to mandatory marking on the package in regard to the name of the commodity, the name and address of the manufacturer or packer, the net contents, the date of packing and the price, have already come into effect from September 26, 1977. (Economic & Commercial News. 9(7); 1979; 11)

208 Pulses, edible oilseeds order amended

The Union Government amended the pulses, edible oilseeds and edible oils order suitably on Feb 1 to make it foolproof. An Official

spokesman said that the amendment was made following representations from various state governments about the difficulty in implementing the original order which was issued on Nov 21, 1977. Under the new dispensation, producers will include persons who purchase unprocessed pulses and edible oilseeds and edible oils, process these pulses or manufacture oil from the seeds and oils and sell those processed stuff to a wholesaler or through commission agents.

Secondly the original order did not provide for stock limits of a dealer who also carried on business as a producer or as a commission agent. In the amended order the position has been made clear. A dealer, who is also carrying on business as a producer or a commission agent, shall be entitled to retain stock limits specified for each business if business accounts which relate to it are kept separate from one another. Thirdly, it has been provided in the new order that the stock limits would be related to the maximum quantity of the raw material to be used or the finished product held during any one of the three years ending on October 1977.

This is mainly to cover those mills, which for various reasons like adverse seasonal condition, labour unrest and the like could not work to optimum capacity during the year ending Oct 31, 1977, which was the period of reckoning provided for in the earlier order. In case of a new mill which had commenced production subsequent to the issue of the original order, stock limits would be related to the annual installed capacity.

In the fourth place, regarding stock in transit, it has been clarified that it should be treated to have been included in the stocks of the dealer in whom the property in such quantity is retained during such transit in accordance with the terms of any contract or agreement in pursuance of which the quantity is in such transit. Sources close to the Commerce Ministry maintain that the order would strike a blow on the hoarding of pulses, edible oilseeds and oils. (Indian Economic Dairy. 9(7); 1978; 5726)

209 Tests show no harm by glutamate

After injecting fetal monkeys with up to 16.6 g monosodium glutamate (MSG) per kg body weight, Dr. W. Ann Reynolds, University of Illinois, found no damage in the hypothalamic region of the monkeys' brains. Reporting to a symposium May 29 - 31 at Mario Negri Institute of Pharmacological Research, Milan, Italy, Reynolds stated the monkey fetus is a very good model of the human fetus and exhibits a glutamate-impermeable barrier between blood and brain.

Dr. L.J. Filer, University of Iowa, gave results of feeding and injecting infants from 11 days to 11 months old with sources of glutamate and aspartate. None of the babies showed unusually high blood levels of either amino acid, so Filer concluded they metabolized glutamate and aspartate rapidly.

Dr. Silvio Garattini of Mario Negri Institute confirmed that no increase in brain glutamate concentration occurs, even when massive ingestion of MSG raises blood glutamate levels.

Dr. Alistair Worden, Huntington Research Centre, Cambridge, England, found no toxic effect in dogs or rats fed high doses of MSG over two years. (Food Product Development. 12(8); 1978; 91)

210 Vegetable oil cancer link

During a symposium on controversies in nutrition at Hyannis, Mass., Dr. Joseph Vitale, nutrition pathologist at Boston University School of Medicine stated that diets rich in polyunsaturated (Vegetable) fats "appear to lose natural defenses to the disease when placed on diets in which polyunsaturates comprise 20% of daily intake of calories." He noted that it's not unusual for many people normally to consume 20% fat as polyunsaturates. "When patients are returned to a diet containing both saturated fat and 8 to 9% polyunsaturates," Vitale concluded, "they return to their previous state of immune competency."

At the same symposium, Dr. George V. Mann, Vanderbilt University, offered support for Vitale's position, "Highly touted corn oil products contain 15 to 20% unnatural 'trans fatty acids', which are suspected as causative link to heart disease," said Mann. "Therefore, people would do better to go back to butter and lard." (Food Product Development. 13(1); 1979; 52)

211 Cancer-causing agent in beer

Nitrosamine compounds were present in some American beers in amounts of 2 to 3 parts per billion.

The U.S. Department of Agriculture has said that under certain conditions, nitrosamines have been found to be Carcinogenic. (Food Nutrition and Health. 2(6); 1978; 2)

212 Special fungistatic coating

For over eleven years food processors throughout the world have been effectively controlling the troublesome problem of bacteria and mold growth by using a special fungistatic protective coating. Called Steridex, the coating has proved to be effective in bakeries, breweries, food processing plants, mushroom farms, and even in hospitals.

This paste-like plastic membrane coating, provides several advantages over conventional coatings. (Food Engineering. 3(10); 1978; 68)

213 Dishwashing liquid

Mop is a dishwashing liquid for utensils, pots, pans, crockery and glass. It penetrates below the dirt, frees it from the surface, suspends it and prevents it from settling again on the dishes. (Industrial Products Finder. 7(7); 1979; 21)

214 Moisture-controlled cooker features continuous cleaning

The cleaning operation in this newly-available cooking system is

unique in that it operates continuously throughout the cooking process. Water maintained at a cool 190°F is circulated through the hollow bottom pan shell. This constant cooling eliminates food burn-on and minimizes sticking to both the pan bottom and the conveyor. As the conveyor returns underneath the oven, it is sprayed with hot water from the cooling system, thus preventing buildup. For complete cleaning, special built-in spray nozzles are activated to wash the unit from the inside. Typical cleaning time is about one hour.

Cooking in this newly-available system is accomplished by the turbulent flow of a moisture-controlled oven atmosphere. This seals in the product's natural moisture and protects against lost weight and flavor. This lack of dehydration results in a higher yield of product and better nutrition, appearance, and taste. When used in conjunction with pre cooking equipment, excess oil and greasiness, such as that found in the total frying of meat patties and poultry parts, is eliminated.

The system is designed for easy maintenance and inspection, and operates with either gas or electricity. (Food Engineering. 3(10); 1978; 116)

```

*****
*                                     *
* TRANSFER OF TECHNOLOGY           *
*   AND NEW INDUSTRIES             *
*                                     *
*****

```

215 Appropriate industrial technology

A two-part International Forum on appropriate Industrial Technology is being organized jointly by UNIDO and the Government of India. The Forum will be the largest conference ever convened to identify industrial technology appropriate to the specific needs of developing countries and the transfer of such technology to these countries.

The first part of the Forum, to be held at New Delhi from 20 to 25 November, 1979, will bring together 300-500 public and private decision makers, technical experts and representatives of research institutes

concerned with the practice and application of appropriate technology. Apart from the conceptual and policy framework for appropriate technology in developing countries, the meeting will discuss the application of appropriate techniques and processes in 12 sectors, viz. agricultural machinery and implements, food storage and processing, light engineering and rural workshops, energy for rural requirements, low cost transport for rural areas, paper products and small pulp mills, basic industries (steel, fertilizers, chemicals etc.), sugar, textiles, oils and fats, cement and building materials, and drugs and pharmaceuticals.

The second part of the forum will be a conference of ministers from some 40 developed and developing countries which will consider the policy implications of the conclusions reached by the first meeting. The ministerial conference will take place from 28 to 30 November, 1979, at Anand, Gujarat. (Industrial News Digest. 2(5); 1979; 5)

216 Baby food unit for Rajahmundry

A baby food (milk powder) factory, said to be one of the biggest in Asia will be set up at Rajahmundry at a total cost of Rs.12 crores. It would produce 40 tons of baby food powder per day utilising four lakh liters of milk. The factory would be set up in two stages and in the first stage, 25 tonnes of baby food would be produced by utilising 2.5 lakh litres of milk per day. (Indian Dairyman. 31(1); 1979; 70)

217 Rice mills

The Food Corporation of India has decided to set up five more modern rice mills in Andhra Pradesh, at an estimated cost of about Rs.1.50 crores.

The four modern rice mills set up by the Corporation at Nellore, Sattenapalli, Miryalaguda and Nizamabad are functioning satisfactorily.

The five mills, with a four-tonne per hour capacity each, would be started in Karimnagar, Khammam, Krishna, East Godavari and West districts. (Industrial Development News. 13(10); 1978; 129, 130)

218 Fruit concentrate

A fruit concentrate project with foreign collaboration is proposed to be set up at Silchar in Cachar district of Assam, involving an investment of Rs. 6 crores. German Democratic Republic would collaborate in the project.

Fruits from the entire north-eastern region would be brought to the plant for production of concentrates for both domestic and foreign markets. (Industrial Development News. 13(10); 1978; 127)

219 Tryptophan production by fermentation

Sorigona, a subsidiary of the Swedish Sugar Corporation, is shortly to begin commercial production of L-tryptophan, by fermentation.

The process was jointly developed over ten years by Sorigona and Bofors Nobel Kemi and is the first tryptophan fermentation process to be used commercially. Strain selection and mutation led to the development of a yeast, *Candida humicola*, which leads to economically recoverable quantities of L-tryptophan after 60 to 70 hours fermentation at 30°C in a solution based on indole and sugar. The amino acid is extracted, using centrifuges and ion-exchangers, and crystallized several times to obtain the required degree of purity.

Conventionally, L-tryptophan is produced by organic synthesis with phenyl-hydrazine, acetaminomalonic ester and acrolein as raw materials. (Indian Chemical Journal. 13(9); 1979; 44)

220 Vitamin C plant

Maize products is planning to set up a Rs. 1.5 crore Vitamin C plant at Ahmedabad. The company possesses an industrial licence for manufacture of ascorbic acid, sodium ascorbate, and calcium ascorbate at the rate of 250 tonnes per year. (Industrial Development News. 12(8); 1978; 106)

221 Salt

The Union Government has approved the proposal for the establishment of a new undertaking, viz., Solar Salt Works in Jodia (Gujarat) for the manufacture of 3.50 lakh tonnes of common salt annually. (Industrial Development News. 12(8); 1978; 106)

222 Soybean biscuit unit in Madhya Pradesh

The Madhya Pradesh Government has decided to set up a soybean biscuit plant in the state with a capital of Rs.15 crores. The output would not only meet the requirement of the country but would also earn a huge foreign exchange. (Economic Times. June 13, 1979)

INDEX

- Alcohol (from) Cane juice 109
- Appropriate technology 215
- Baby food factory 216
- Bacon products, potassium sorbate 100
- Baggasse, utilization 122
- Bakery, waste heat recovery 124
- Band saw blades (for) Sawing 140
- Beer (cause of) Cancer 211
- Biscuit (from) Soybean 222
- Blown film (used for) Milk pouch production 164
- Bread preservative 101
- Caffeine (from) Coffee 118
- Cancer
 - (caused by) Beer 211
 - (caused by) Vegetable oil 210
- Cane juice (used in) Alcohol production 109
- Canning, food 162, 163
- Capping machine-semi automatic 161
- Cardamom production, state wise statistics 190
- Cartoning machine (used for) Soft drink packaging 165
- Cashewnut
 - Import 200
 - Production 188, 189
 - Production, state wise statistics 188
- Cellulose (removal from) Rapeseed 117
- Centrifugemachine-open type 139
- Cheese - Italian variety 127
- Chicken - type flavour 107
- Cleaning process (in) Moisture-controlled cooker 214
- Cocoa butter substitute (from) Palm oil 99
- Coffee
 - Analysis 118
 - Freeze drying 131
- Colony counting machine - automatic 176
- Compactor (for) Food waste disposal 123
- Confectionery twist wrapper 166
- Continuous frying machine 152
- Conveyor system (for) Food handling 132, 133
- Cooker - moisture controlled 214
- Cooking fuel (from) Farm waste 121
- Copra, Production 184
- Cotton seed oil, production 187
- Crab analog (from) Wheat gluten 112
- Dairy product (with) Low-calorie 125
- Dewatering press-rotary 155
- Dish washing liquid (used in) Food industry 213
- Distillation still (used for) Oil extraction 156
- Drum mixer 148
- Emulgum - food preservative 103
- Emulsifier, food (from) Animal fat 105
- Emulsifier, food (from) Soy Protein 106
- Ethyl alcohol, export legislation 198
- Export
 - Financial aid 202
 - Fish meal 199
 - Oil seed 201
- Export legislation 198
- Espresso coffee freeze drying 131
- Fat, analysis 170-172
- Fibre drum (for) Food packaging 159
- Filter fabric-chemically inert 181
- Filter - multiple plate 137
- Fish freshness detection apparatus 178
- Fish meal, export 199
- Fish
 - Packaging 160
 - Processing 116
- Flavour, chicken-type 107
- Flavour additive 108
- Food preservative 101-4
- Freeze-drying, coffee 131
 - food 131, 150
- Fruit concentrate project 218
- Fruit preservation, spray drying, 111
- Fungistatic coating (in) Food industry 212
- Gas detector 158
- Glutamate (role in) Human nutrition 209
- Grinder - home scale 143
- Groundnut flour, industrial applications 128
- Groundnut kernel, marketable surplus 193

Ham-boning line (for) High meat
production 142
Hamburger, additive 104
Head space analyser, food industry 179
Heat exchanger (used for) Food Process-
ing 153
Homogenizer (for) Non-contact
sealing 146
Hydrolysed gelatine (as) Protein
source 113

Import, cashewnut 200
Insect control device - non-
chemical 98
Insectocutor-insect control device 98
Insulated box (used for) Fish
packaging 160

Juicer 154

Legislation, pulse 208

Magnuhuller - a nut huller 147
Micronizer (for) Grinding 145
Micro pulveriser (for) Grinder 144
Milk pouch (from) Blown film 164
Milk powder canning (use of) Vacuum
gassing turret 163
Moisture tester 173, 174
Molasses, export legislation 198
Molasses product (used as) Hamburger
additive 104
Mop - dishwashing liquid 213
Multiple plate filter 137

Niger seed production, state wise
statistics 183
Nut huller 147

Oil, analysis 170, 171

Oil
(in) Cake 197
(used for) Paint production 194
(used for) Soap production 192

Oil mills - state wise statistics 195
Oil refineries, statistics 196
Oil seed, export 201
Oil seed production, state wise
statistics 185
Oil seed production, world statis-
tics 182
Oligosaccharide (in) Soybean 115

Packaging, food 159-167
Paint production (use of) Vegetable
oil 194
Palm oil (used in) Butter production
Peanut see Groundnut
Peel-off lid (for) Canning, food 16
Potassium sorbate (in) bacon
products 100
Prepac Sachet filling machine 167
Preservative, wine 110
Production

Cardamom 190
Cashewnut 188, 189
Copra 184
Cottonseed oil 187
Nigerseed 183
Oil seed 182, 185
Paint 194
Pulse 191
Soap 192

Tryptophan 219

Propion - textile fibre 181
Protein, kjeldahl analysis 168
Protein food (from) Milk 130
Protein food (from) wheat germ 120
Pulse, legislation 208
Pulse production 191

Raisin juice (used as) Bread
preservative 101
Rapeseed, dehulling 117
Refrigerator (for) pre-cooked
food freezing 151
Resistivity controller (for)
freeze drying 150
Rice mill 217
Rotating tube dryer 149

Salt factory 221
Savortone - a milk protein food 13
Sedimentation test mixer (for)
wheat flour 177
Segregating machine (used for)
grain cleaning 134
Sieving machine, grain 135, 136
Sifter (for) liquids 138
Skin peeling, vegetable 141
Soap production (consumption of)
oil 192
Soft drink packaging (use of)
cartoning machine 165
Soybean biscuit factory 222

- Soybean flatulence 115
Soybean lecithin product 114
Soy protein, texturised 129
Soy protein (used as) Food emulsifier 106
Spray drying, fruit 111
Standardisation (of) Weights and measures 207
Steam brushing machine (for) vegetable skin peeling 141
Steridex - fungistatic coating 212
Sugar, analysis 169
Sugar factory, waste utilization 122

Temperature controller 175
Titration apparatus-automatic 180
Torr-meter (used for) Freshness detection, fish 178
Trade legislation 203, 204
Trade promotion office 205, 206
Tryptophan, production 219

Vacuum gassing tunnel (used for) Milk powder canning 163
Vegetable oil (cause of) Cancer 210
Vertical conveyor (for) Food handling 133
Vertical conveyor (for) Pneumatic dryer 149
Vibratory sieving/grading machine (for) Grain 135
Vitamin C plant 220

Weighing/filling machine 157
Weights and measures, standardization 207
Wheat flour, sedimentation test 177
Wheat germ, protein utilization 120
Wheat gluten, (used for) Production, Crab meat 112
Wine preservative 110

Xanthan gum, production 102
Xanthomonas campestris (in) Gum production 102

Yogurt powder 126



